DOCUMENT RESUME

ED 458 998 PS 029 967

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TITLE	Improving Children's Readiness for School: Preschool Programs Make a Difference, but Quality Counts!
INSTITUTION	Southern Regional Education Board, Atlanta, GA.
PUB DATE	2001-00-00
NOTE	27p.
AVAILABLE FROM	Southern Regional Education Board, 592 10th Street, NW, Atlanta, GA 30318-5790 ($5). Tel: 404-875-9211; Fax: 404-872-1477; e-mail: publications@sreb.org; Web site: http://www.sreb.org.
PUB TYPE	Reports - Evaluative (142)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	At Risk Persons; *Educational Quality; *Preschool Children; *Preschool Education; Program Descriptions; Program Effectiveness; *School Readiness
IDENTIFIERS	Carolina Abecedarian Project NC; Chicago Child Parent Centers IL; High Scope Model; Perry Preschool Project; Project Head Start

ABSTRACT

This report examines the evidence that high-quality preschool programs can help to improve the school readiness of at-risk children, focusing on 10 programs that have been the subjects of careful evaluations. These programs include four well-known "model programs" (High/Scope Perry Preschool Project, the Carolina Abecedarian Project, the Chicago Child-Parent Centers, and the New York State Experimental Prekindergarten program) and the federal Head Start program, as well as state programs in Florida, Georgia, Maryland, South Carolina, and Texas. The report concludes with a discussion of the characteristics that distinguish these programs as high-quality in the areas of health and safety standards, student-to-teacher ratios and class size, teacher qualifications and compensation, curricula, and parent involvement. (Contains 13 references.) (KB)

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SREB

Improving Children's Readiness for School:

Preschool Programs Make a Difference, But Quality Counts!

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How do you know it's a good program?

"An observer with limited background in early childhood education can find it difficult to tell a good preschool classroom from a bad one. In both cases, it may appear that children simply are playing. In a bad classroom, that actually may be all they are doing: simply playing.

"In a good classroom, what appears to be play will be anything but simple. The teacher constantly prompts children to ask questions and make choices, providing hands-on materials chosen to raise each child's learning level and take advantage of the child's interests. The teacher continuously monitors and adjusts what is being taught to allow for young children's limited attention spans.

"While the children think they simply are playing, the teacher is well aware of how hard she or he is working."

David Denton

Do prekindergarten programs really help at-risk children succeed in school?

Since 1962, careful evaluations of many programs nationwide — including state programs in **Florida, Georgia, Maryland, South Carolina** and **Texas** — have shown that high-quality prekindergarten can:

- **help children be more ready for school;**
- **improve students' scores on standardized tests;**
- **reduce students' chances of repeating a grade;**
- **reduce referrals of students to special education; and**
- **improve students' chances of completing high school.**

This report was prepared by David R. Denton, SREB director of school readiness and reading.

Landmark Studies

The High/Scope Perry Preschool Project

Ypsilanti, Michigan, 1962-1967

This project has been the one cited most frequently as providing evidence of preschool's effectiveness in preparing at-risk children to succeed in school. The High/Scope curriculum is now one of the most widely accepted model curricula. In the early 1990s, an analysis of costs and savings found that participation in the Perry Preschool Project produced economic benefits for the public. The estimated per-child economic benefit — more than $25,000 — was more than twice the per-child cost to operate the program.

◆ Program description

- **Target population:** 3- and 4-year-old, low-income, African-American children with IQ scores of 85 or below
- **Services provided:** 2.5 hours of daily classroom instruction from October to May, plus a weekly 90-minute home visit to support parents
- **Teacher qualifications:** State-certified teachers trained in child development
- **Student-to-teacher ratio:** 6-to-1
- **Maximum class size:** 16
- **Duration:** One or two years (45 children enrolled at age 3; 13 enrolled at age 4)
- **Number of students evaluated:** 58 served in the program; 65 in the control group
- **Average cost per child per year:** About $6,800
- **Latest follow-up age:** 27 (95 percent of those originally evaluated)

◆ Benefits for program participants (compared with control group)

- **Higher IQ scores when children entered school**
- **Better grades through age 19**
- **Higher scores on achievement tests through age 14**
- **Fewer placements in special education through age 19** (16 percent vs. 28 percent)
- **Higher graduation rate from high school** (66 percent vs. 45 percent)
- **Higher employment rate at age 19** (50 percent vs. 32 percent)
- **Fewer welfare recipients through age 27** (15 percent vs. 32 percent)
- **Higher monthly earnings at age 27** ($1,220 vs. $770)

Improving Children's Readiness for School:

Preschool Programs Make a Difference, But Quality Counts!

SREB states are national leaders in developing programs to help all children be ready for school. Fourteen of the 16 SREB states have pre-school programs. Georgia and Texas are the two largest state programs in America. SREB states also are leaders in evaluating the effectiveness of their preschool programs. This report discusses five SREB states — **Florida, Georgia, Maryland, South Carolina** and **Texas** — that have evaluated their prekindergarten programs well enough to provide reliable evidence of their effectiveness.

Even as state preschool programs expand, policy-makers continue to ask whether there is solid evidence that such programs really help improve student performance. The answer is "yes." There is solid evidence that preschool can make a big difference, and the evidence is growing steadily. It also is increasingly clear that programs must be high-quality to make a difference. All studies that claim to provide evidence of effectiveness are not equally reliable, however. The purpose of this report is to identify programs that have been evaluated carefully and that provide results that policy-makers can use in deciding how best to improve the school readiness of children in their states.

The 10 programs discussed in this report cover four decades, during which scientific knowledge about child development expanded dramatically. These programs help to define the characteristics of high-quality preschool programs and clearly demonstrate that high-quality preschool improves children's readiness for school. Average scores on first-grade achievement tests in reading and mathematics were higher for children who participated in the preschool programs than for similar children who did not participate in the programs. All of the programs also have documented that the children served are less likely to repeat a grade or be referred for special education services.

Landmark Studies

The Carolina Abecedarian Project

Chapel Hill, North Carolina, 1972-1985

This project and the High/Scope Perry Preschool Project are the two model programs with the most reliable evaluation results and the longest follow-up times. About half of the children in the preschool program received continuing support services through age 8, and those children generally performed at higher academic levels than did children who received services only until they entered school.

◆ Program description

- **Target population:** At-risk children between the ages of 6 weeks and 3 months were chosen to participate in the program based on family scores on a high-risk index (largely single mothers with an average age of 20).
- **Services provided:** Full-day, year-round child care/preschool, child health services and parent support services
- **Teacher qualifications:** Not specified, but teachers were paid at levels comparable to those for public school teachers.
- **Student-to-teacher ratios:** 3-to-1 for infants and toddlers, then 6-to-1 for older children
- **Maximum class size:** 14
- **Duration:** Five to eight years
- **Number of students evaluated:** 57 served in the program; 54 in the control group
- **Average cost per child per year:** About $11,000
- **Latest follow-up age:** 21 (94 percent of those originally evaluated)

◆ Benefits for program participants (compared with control group)

- **Higher IQ scores through age 21**
- **Higher scores on achievement tests through age 21**
- **Less chance of students repeating a grade through age 15** (31 percent vs. 55 percent)
- **Fewer placements in special education through age 15** (25 percent vs. 48 percent)
- **Higher college-attendance rate at age 21** (36 percent vs. 14 percent)
- **Lower rate of childbearing through age 21**

Note: The benefits reported for the programs in this report include only those shown to be statistically significant.

For many years, the question of whether research supports the effectiveness of preschool programs was answered with references to a few model programs. The most well-known are the **High/Scope Perry Preschool Project** of 1962-1967 (see summary on page 2) and the **Carolina Abecedarian Project** of 1972-1985 (page 4). Other prominent examples are the **Chicago Child-Parent Center Program** (page 6) and the **New York State Experimental Prekindergarten Program** (page 7); these programs began in 1965 and 1966, respectively, and continue today. Rigorous evaluations of all four of these programs show that at-risk children who participated in the programs performed better in school than did similar children who did not receive services. Some benefits have been documented as late as young adulthood.

Separate analyses of costs and benefits of the Perry Preschool Project and the Chicago Child-Parent Center Program have found that program participation produced long-term economic benefits for the public that were substantially greater than the costs of the programs. The benefits stemmed from the reduced need for school remedial services, reduced spending for welfare and criminal justice, reduced costs to crime victims (included only for the Chicago program), and higher tax revenues as a result of increased earnings.

The federal **Head Start** program (page 9), which began in 1965, is by far the largest and best-known preschool program in the nation. By 2000-2001 Head Start had served more than 20 million at-risk children. Head Start never has had funding to serve more than about half of all eligible children, and the quality of individual Head Start programs has varied. However, multiple evaluations have shown that good Head Start programs can improve significantly children's readiness for school.

For states interested in reaching more at-risk children through preschool programs, one option is to provide Head Start with state funding. Nationally, thirteen states supplement Head Start with state funds — some of them on a large scale. Oklahoma is the only SREB state with a Head Start supplement program. Oklahoma created its program in 1993, more than a decade after the state prekindergarten program was established. The supplement program enables Head Start to serve only about 400 additional children, a small fraction of the more than 20,000 children served by Oklahoma's prekindergarten program.

Landmark Studies

The Chicago Child-Parent Center Program

Chicago, 1965 to present

This was one of the first large-scale, publicly funded programs. The preschools operate in the same buildings where children later attend elementary school. Students can enter the program as late as kindergarten, but those who enter earliest and participate longest have benefited most. Achievement gains generally have been greater for boys than for girls. An analysis of costs and savings reported in 2001 found that participation in the preschool part of the program for 1.5 years produced an estimated $48,000 per child in economic benefits for the public. This amount is more than seven times the per-child cost to operate the program.

◆ Program description

- **Target population:** Economically disadvantaged African-American (93 percent of participants) and Hispanic (7 percent) 3-, 4- and 5-year-olds
- **Services provided:** Half-day preschool during the school year with comprehensive education, health and social services; half- or full-day kindergarten with comprehensive education, health and social services. Services continued at least through kindergarten, with some children continuing in the program through third grade in classes of 17 to 25 students, compared with an average class size of 30 for the control group.
- **Teacher qualifications:** Not specified for preschool
- **Student-to-teacher ratio:** 8.5-to-1 (preschool)
- **Maximum class size:** 17
- **Duration:** One to six years (depending on age at entry and years in the program)
- **Number of students evaluated:** 989 served in the program (at least one year of preschool); 550 in the control group
- **Average cost per child per year:** About $4,500
- **Latest follow-up age:** 20 (83 percent of those originally evaluated)

◆ Benefits for program participants (compared with control group)

- **Higher scores on achievement tests through age 14**
- **Less chance of students repeating a grade through age 14** (25 percent vs. 37 percent)
- **Less average time in special education through age 14** (six months vs. nine months)
- **Higher graduation rate from high school** (62 percent vs. 49 percent)

A much more common approach has been to establish and fund prekindergarten programs that are completely separate from Head Start. California, New York and Pennsylvania began such programs in the mid-1960s, but by 1985 only five other states — Maine, Maryland, Oklahoma, South Carolina and Texas — had joined them. It was not until states began looking for ways to improve school readiness that interest in state programs began to surge. More than two-thirds of all states nationwide — and 14 of the 16 SREB states — have prekindergarten programs in 2001.

Unfortunately, planning for state prekindergarten programs has not always included provisions for the rigorous evaluation needed to document their effectiveness reliably. In addition to New York's, five other states' programs have undergone rigorous evaluations. All five of these programs are in SREB states (**Florida, Georgia, Maryland, South Carolina** and **Texas**). In each case, evaluation results confirm the program's effectiveness in improving children's readiness for school (page 14).

These and other preschool programs almost always are established with the goal of improving children's readiness for school. If the children served by a program are well-prepared to succeed when they arrive at school, the program is doing its job. From then on, it is the school's job to build upon the foundation that quality preschool programs provide. Any time the benefits of an early childhood program can be tracked five, 10 or even 20 years into the future, as is the case for some of the programs discussed in this report, it is certainly worthy of attention. Such long-term benefits should be viewed as bonuses, however, and as a sign that the schools are doing something right.

The programs discussed in this report provide compelling evidence that high-quality prekindergarten can help at-risk children be more ready to succeed in school. The next important question is "What makes these programs high-quality?" The answer is that they all share certain characteristics that are fundamental to high quality. Every program is not at the highest level on every characteristic, but all demonstrate a commitment to overall quality. The five most important characteristics of quality are:

- **strong health and safety standards;**
- **low student-to-teacher ratios and small classes;**
- **qualified, well-compensated teachers;**
- **proven curricula and learning processes; and**
- **meaningful involvement by parents.**

These five keys to high quality are discussed beginning on page 20.

Landmark Studies

The New York State Experimental Prekindergarten Program

1966 to present

This program was the first state-supported prekindergarten in the nation and it continues to serve at-risk children today. The state's Universal Prekindergarten Program, which began in 1997 and is open to all 4-year-olds, is modelled on the Experimental Program. Funding is available to all school districts, but each district decides whether to establish a program.

◆ Program description

- **Target population:** 3- and 4-year-olds from economically disadvantaged families
- **Services provided:** Half-day preschool during the school year, with a required advisory committee of parents and at least one home visit before a child starts the program
- **Teacher qualifications:** State certification in elementary education, bilingual elementary education or early childhood education
- **Student-to-teacher ratio:** 7-to-1 for 3-year-olds, 8-to-1 for 4-year-olds
- **Maximum class sizes:** 16 if there are two teachers; 20 if there are three teachers
- **Duration:** One or two years
- **Number of students evaluated:** 1,348 in the program; 258 in the control group
- **Average cost per child per year:** Not available for the period of the evaluation (1966-1976); 2000-2001 funding is $2,700 per child for about 20,000 children served. Funding has been a problem for both the Experimental Program and the Universal Program in recent years.
- **Latest follow-up age:** 13

◆ Benefits for program participants (compared with control group)

- **Better overall readiness when children enter school**
- **Higher scores on achievement tests through grade six**
- **Less chance of students repeating a grade through grade three** (16 percent vs. 21 percent)
- **Better school attendance through grade six**

Head Start

The federal Head Start program began in the mid-1960s as an effort to help children overcome the social and educational disadvantages of growing up in poverty. Head Start was based on the premise that providing disadvantaged children with extra help in the preschool years would improve their chances of success in school.

Head Start never was intended to be strictly an education program. Those who designed the program recognized that social skills and physical well-being are necessary for children to succeed. Comprehensive child-health services and social support for families have been part of Head Start from the beginning. Head Start is administered by the Department of Health and Human Services.

Head Start has undergone many significant changes since the first eight-week pilot program in the summer of 1965, but its emphasis on comprehensive services has not changed. The public and policy-makers usually regard it as an educational program, however, and most efforts to evaluate its success have focused on how children perform in school.

Today, Head Start programs serve 3- and 4-year-olds, as well as 5-year-olds who are not in kindergarten. The Early Head Start program, added in 1994, serves infants and toddlers. Since 1965, more than 20 million children have been served by Head Start. In 1999-2000, 850,000 children nationwide were served by 180,000 paid staff — aided by more than a million volunteers — in 46,000 Head Start classrooms. That figure represents fewer than half of all eligible children, but the percentages of eligible children served vary considerably from state to state. Among the SREB states, the percentages of eligible children served range from about 30 percent in Florida to 90 percent in Mississippi.

This variability among states is a result primarily of population growth and the way in which programs historically have been funded. The difference between the percentages of children served in Florida and Mississippi is exaggerated by Florida's dramatic population growth in the last half of the 20th century. The Head Start funding formula also gave states that aggressively established programs during the early years — such as Mississippi — an advantage in obtaining additional funding.

One result of the variation among states has been the establishment of state-funded prekindergarten programs in states with large numbers of children who are eligible for Head Start but are not served. Florida's Prekindergarten Early Intervention Program, for example, serves more of the state's at-risk children than does Head Start.

◆ Head Start Program Characteristics

- **Target population:** 3-, 4- and 5-year-olds from families with incomes below the federal poverty line (90 percent of children served must be in this category); 10 percent of slots must be available to children with disabilities; the Early Head Start program serves children under age 3.
- **Services provided:** Programs operate at least 3.5 hours a day during the school year and provide comprehensive services in education, health and social services. A growing number of Head Start programs offer full-year, full-day services to meet the needs of working parents. Parents and other community members play a significant role in program operations and decision-making.
- **Teacher qualifications:** At least one member of the teaching staff must have a child development associate (CDA) credential. The CDA is an entry-level, nondegree credential developed by the National Association for the Education of Young Children and administered by the Council for Professional Recognition with funding support from the federal government. Effective in September 2003, at least half of the teaching staff must have at least associate's degrees in appropriate fields.
- **Student-to-teacher ratios:** 8.5-to-1 for 3-year-olds; 10-to-1 for 4-year-olds
- **Maximum class sizes:** 17 for 3-year-olds; 20 for 4-year-olds
- **Number of children served:** 858,000 nationwide, with more than 300,000 in SREB states (about 37 percent of eligible children) in fiscal year 2000
- **Age distribution:** About 5 percent are 5 years old; 56 percent are 4 years old; 33 percent are 3 years old; and 6 percent are under age 3.
- **Average cost per child per year:** About $6,000 in federal funds in fiscal year 2000.
- **Latest follow-up age:** Post high school

◆ Benefits for program participants (compared with control groups)

- **Higher scores on achievement tests in elementary school**
- **Less chance of students repeating a grade in elementary school**
- **Fewer placements in special education in elementary school**
- **Fewer health problems**

Does Head Start improve children's readiness for school?

When the Head Start program began, relatively little was known about identifying and measuring variables in child development. As a result, the original program design did not provide for a scientific evaluation of results. The program since has expanded steadily and changed in many ways, making it difficult to evaluate effects over time.

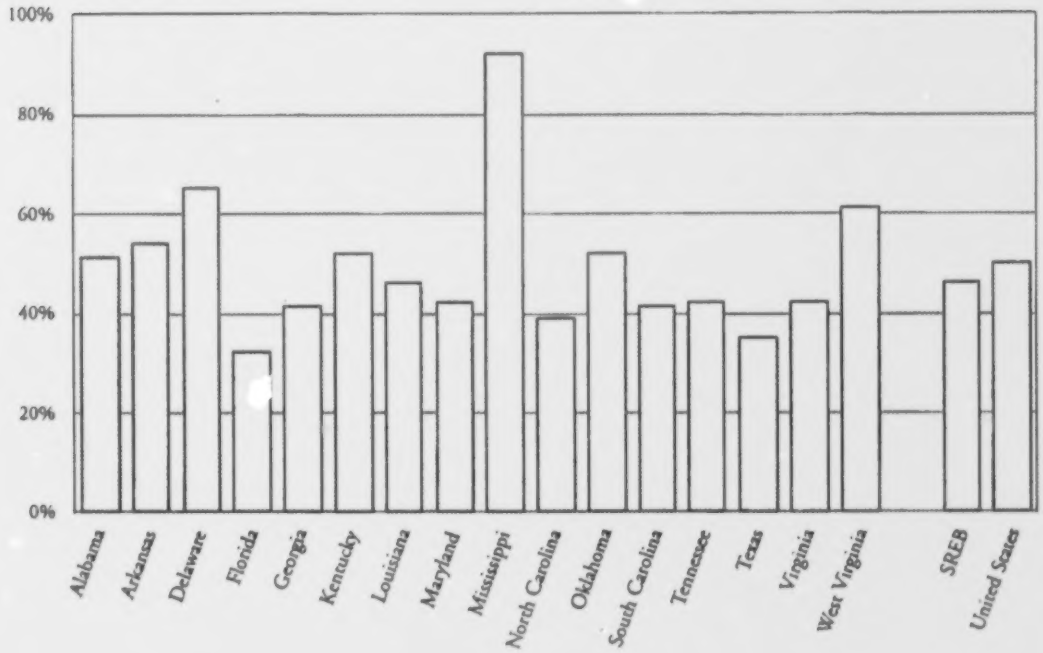
The only real attempt at a national evaluation of Head Start's effectiveness during its first three decades came in 1969, when the program still was quite new. Despite finding that Head Start participants performed better in first and second grade than did children who did not participate, that study concluded that Head Start was not beneficial overall, partly because benefits could not be documented in third grade. In any case, the study's method for selecting a comparison group of nonparticipants was seriously flawed, casting doubt on the validity of its conclusions — positive or negative.

There have been many smaller-scale studies of the effectiveness of individual Head Start programs or groups of programs. At best, these studies provide snapshots of Head Start at particular places and times. They present a mixed picture, with about equal numbers of studies finding either a positive impact or no impact on children's performance in school and a much smaller number showing negative effects from Head Start.

This wide variation in findings is no surprise. The emphasis on local control of Head Start programs has been one of the program's greatest strengths, allowing individual programs to respond directly to local needs and priorities — and often to improve quality beyond the program's minimum requirements. For example, although Head Start's requirements for teacher qualifications historically have been relatively low, many programs voluntarily have exceeded them. Similarly, even though Head Start's maximum student-to-teacher ratios are quite good, a 1995 General Accounting Office report found that almost 20 percent of Head Start programs had ratios that were better than those required.

The emphasis on local control also can be a weakness, however. Until recently, it was politically difficult to raise requirements above the most minimal levels for even a few key staff positions. Local control also has allowed some programs to operate with little outside monitoring, creating wide variation in the quality of individual Head Start programs.

Percent of Eligible Children Served by Head Start in SREB States, 1999-2000



Recent studies using new sources of data have resulted in more positive conclusions about Head Start's effectiveness. A 1995 study based on data from the Bureau of Labor Statistics' *National Longitudinal Survey of Youth* found that Head Start participants had significantly higher test scores and school performance not only than those of children with no preschool experience but also than those of children in other preschool programs. For white children, these benefits were long-lasting, but for African-American children, they diminished over time.

The discovery that Head Start's early benefits gradually disappear, especially for minority children, probably has been the most consistent finding in the research, and it has persisted throughout the program's history. The apparent fade-out of benefits has been a focal point for critics, who argue that the benefits of Head Start are not worth the costs. There is growing evidence, however, that this phenomenon has less to do with the Head Start program than with children's experiences in school.

Head Start is aimed at families living in poverty. In addition, most children who attend Head Start are minorities. Two-thirds of all Head Start participants in 1999-2000 were African-American, Hispanic or American Indian. Unfortunately, poor and minority communities historically have had the nation's lowest-quality schools.

Research on at-risk children clearly shows that one-time-only interventions cannot produce long-term gains in school performance. Children do not stop being at-risk just because they have participated in Head Start. To succeed in the long run, they need schools that assess them regularly to detect new or recurring problems. They need high-quality classrooms that constantly reinforce their positive experiences in Head Start. But the children targeted by Head Start are the least likely to attend that kind of school. The result was summarized in a 1995 University of Michigan study, "Where Do Head Start Attendees End Up? One Reason Why Preschool Effects Fade Out":

> **No matter how beneficial Head Start was initially for its young participants, such benefits are structurally undermined if students are subsequently exposed to schooling of systematically low quality. The low quality of middle-grade schools attended by former Head Start participants explains, in part, why Head Start effects fade over time.**

Early results from the most recent comprehensive evaluation of Head Start's effectiveness confirm the program's positive effects on children's readiness for school. This project — Head Start FACES: Longitudinal Findings on Program Performance — is following a random sample of 3,200 children who entered Head Start in fall 1997. Results through kindergarten and entry into first grade showed that:

- Head Start narrows the gaps between disadvantaged and non-disadvantaged children in vocabulary and writing skills during the Head Start year.
- Children who participated in Head Start had improved social skills.
- Children who participated in Head Start showed more improvements in word knowledge, letter recognition, math skills and writing skills during the kindergarten year than did children who were not in the program.

Benefits of State-funded Preschool Programs

"In each of these five states, participation in the prekindergarten program improved school readiness, raised scores on achievement tests in reading and mathematics, and reduced the likelihood that a child would be required to repeat a grade in elementary school."

Interest in state-funded preschool programs has grown dramatically in recent years as states have tried to identify the most effective ways to improve children's readiness for school. Many state programs are new and have not been evaluated carefully. In some states where evaluations have been attempted, either the designs of the studies or the ways they were conducted make the reliability of results questionable.

However, methodologically sound evaluations in five SREB states — **Florida, Georgia, Maryland, South Carolina** and **Texas** — have produced valuable evidence that state prekindergarten programs can help improve children's chances of success in school. Each evaluation compared children who completed the state preschool program with similar children who did not. (For additional information on preschool programs in SREB states, see the 1999 SREB report *Prekindergarten and Parent Support Programs and the 2000 report SREB States Lead the Way: Getting Children Ready for the First Grade.)*

In each of these five states evaluations have documented that participation in the prekindergarten program improved students' readiness for school. The gains in test scores and reductions in grade retention are especially significant in light of the emphasis in many states on tying promotion decisions to test scores. While social promotion clearly does a grave disservice to struggling students, it is equally clear that requiring failing students to repeat a grade is ineffective. The only viable solution to the problem of social promotion is to reduce the number of failing students. The evaluation results in these five states strongly suggest that providing quality prekindergarten for at-risk students can help. (This topic was discussed in detail in the 2001 SREB report *Finding Alternatives to Failure: Can States End Social Promotion and Reduce Retention Rates?)*

Although the details of program operations vary, each state discussed in this report requires local programs — whether operated by schools, community agencies or private child-care centers — to adhere to clear, well-established quality guidelines. All but one require student-to-teacher ratios no greater than 10-to-1, which is consistent with the recommendations of most experts on early childhood. Two states require prekindergarten teachers to hold state teacher certification; the other three require prekindergarten teachers to have at least child development associate (CDA) credentials.

◆ **Florida Prekindergarten Early Intervention Program** (established in 1987)

Target population: At-risk 3- and 4-year-olds (4-year-olds have priority)

Full-day or half-day: Full-day **Teacher qualifications:** CDA

Student-to-teacher ratio: 10-to-1 **Maximum class size:** Not specified

Number of students evaluated: 1,800 in the program; 1,650 in control group

Average cost per child per year: About $3,500 (2000-2001)

Furthest point of follow-up: Grade four

Benefits for program participants (compared with control group):

- Better overall readiness when children enter school
- Fewer behavioral problems through grade four
- Improved attendance through grade four
- Higher scores on achievement tests through grade four
- Less chance of students repeating a grade through grade four

◆ **Georgia 4-year-old Prekindergarten Program** (established in 1992)

Target population: At-risk 4-year-olds; opened to all 4-year-olds in 1995

Full-day or half-day: Full-day **Teacher qualifications:** CDA (until fall, 2002)

Student-to-teacher ratio: 10-to-1 **Maximum class size:** 20

Number of students evaluated: 378 in the program; 378 in control group

Average cost per child per year: About $3,600 (2000-01)

Furthest point of follow-up: Grade two (to date; evaluation is still in progress)

Benefits for program participants (compared with control group):

- Better overall readiness when children enter school
- Improved attendance through grade two
- Higher scores on achievement tests through grade two
- Less chance of students repeating a grade through grade two

All five programs have high curriculum standards. **Georgia** and **South Carolina** require programs to choose curricula with proven track records, such as the High/Scope curriculum developed by the Perry Preschool Project. **Florida** and **Texas** "strongly encourage" programs to adhere to the standards developed by the National Association for the Education of Young Children, and **Maryland** requires programs to adhere to state curriculum guidelines that are very similar to those standards.

The variations in these five programs' requirements for teacher qualifications and maximum student-to-teacher ratios exemplify the trade-offs states make when designing prekindergarten programs. For example, **Maryland** and **Texas** require prekindergarten teachers to hold bachelor's degrees and state certification — a significantly higher standard than requiring teachers to have CDAs. It is important, however, to consider this issue in historical perspective.

State regulations governing child-care providers, including private preschools, generally have extremely low standards for teacher qualifications. Child-care providers often are required only to have high school diplomas. Except in the most elite (and expensive) private programs, few teachers have had any kind of formal training in child development. The CDA is a nondegree credential based on a standardized curriculum developed by the National Association for the Education of Young Children; it is administered with federal funding support by the Council for Professional Recognition. The CDA was developed primarily to give preschool staff at least a beginning education in child development and learning — in a short time and at a relatively low cost.

While the CDA is unquestionably better than no training at all, it provides only a limited understanding of child development that best serves as a basis for further learning. The CDA can be a first step toward a college degree and, ultimately, state teacher certification. Several states — most notably **North Carolina** — are working to develop a connected series of educational programs to enable those with CDAs to progress up a well-defined career ladder that leads to bachelor's degrees.

The ongoing longitudinal study of **Georgia's** prekindergarten program includes an evaluation of how teachers with different types of credentials have fared in improving student performance. In its report on the fourth year of the study, released in 2001, the evaluation team concluded that "the CDA certificate is no longer a sufficient qualification for Pre-K teachers ..." The CDA is being phased out in the Georgia program. Beginning with the 2002-2003 academic year, the minimum acceptable teaching credential will be a two-year technical degree in early childhood.

◆ **Maryland Extended Elementary Education Program** (established in 1979)

Target population: At-risk 4-year-olds

Full-day or half-day: Half-day

Teacher qualifications: State teacher certification

Student-to-teacher ratio: 10-to-1

Maximum class size: 20

Number of students evaluated: 416 in the program; 476 in control group

Average cost per child per year: About $1,800 (in 2000-2001)

Furthest point of follow-up: Grade 10

Benefits for program participants (compared with control group):

- **Better overall readiness when children enter school**
- **Improved attendance through grade 10**
- **Higher scores on achievement tests through grade 10**
- **Less chance of students repeating a grade through grade 10** (44 percent vs. 64 percent)
- **Fewer placements in special education through grade five** (13 percent vs. 24 percent)

◆ **South Carolina Early Childhood Program** (established in 1984)

Target population: At-risk 4-year-olds

Full-day or half-day: Half-day

Teacher qualifications: CDA

Student-to-teacher ratio: 10-to-1

Maximum class size: 20

Number of students evaluated: 3,700 in the program; 6,500 in control groups

Average cost per child per year: About $1,500 (2000-2001)

Furthest point of follow-up: Grade three

Benefits for program participants (compared with control groups):

- **Better overall readiness when children enter school**
- **Higher scores on achievement tests in kindergarten and first grade**
- **Less chance of students repeating a grade through grade three**

Teacher qualifications are particularly important in **Texas**, which allows student-to-teacher ratios much higher than the recommended 10-to-1. In Texas, the funding for prekindergarten programs goes directly to public schools, which either operate the programs directly or arrange contracts with providers in the community. When schools operate programs, state requirements for kindergarten through grade four apply: one teacher with no more than 22 students. When community providers operate programs, state requirements for child-care providers apply: a maximum class size of 20, but with student-to-teacher ratios no greater than 15-to-1 for 3-year-olds and 17-to-1 for 4-year-olds. (Ironically, adhering to child-care regulations results in somewhat higher program standards, though still not at recommended levels.) Texas' high standard for teacher qualifications undoubtedly has some mitigating effects on its relatively low standard for student-to-teacher ratios.

It is difficult to draw firm conclusions about the relative effectiveness of full-day vs. half-day programs from the experience of these five states. Of the three half-day programs, **Maryland** and **Texas** require teachers to have state certification, and **South Carolina** requires only CDAs. The two full-day programs — in **Florida** and **Georgia** — require only CDAs. Yet all of the programs have documented similar benefits for participating children. It is noteworthy that **Texas** recently committed substantial new funding to an effort to encourage prekindergarten and kindergarten programs to expand from half-day to full-day. (The benefits of a longer day also are suggested by recent developments in **South Carolina**, which has seen significant improvements in students' readiness for first grade since kindergarten programs were expanded from half-day to full-day in 1996-1997.)

These quality factors complicate the question of how much a good prekindergarten program should cost. Information about average teacher salaries is not readily available for all programs. **Maryland** and **Texas** pay their state-certified prekindergarten teachers at the same levels as public school teachers; it is unlikely that salaries of teachers without certification in other programs are at comparable levels. Still, the costs per child appear to be linked primarily to whether the program is half-day or full-day. Based on the figures provided by the states, full-day programs cost about twice as much as half-day programs.

These cost figures may not be fully comparable however, so conclusions should be drawn with caution. Funding sources vary, and in some cases funding for overall program administration comes from a different source than do funds for individual programs. An accurate comparison of program costs would require a far more extensive analysis than is possible here. One fact that is clear from the experiences of these five states is that research is needed on how quality factors relate to one another and to funding in order to produce the desired result: improved readiness for school.

◆ **Texas Public School Prekindergarten** (established in 1984)

Target population: At-risk 3- and 4-year-olds (4-year-olds have priority)

Full-day or half-day: Both **Teacher qualifications:** State teacher certification

Student-to-teacher ratios:

15-to-1 (3-year-olds in programs operated by community providers)
18-to-1 (4-year-olds in programs operated by community providers)
22-to-1 (all children in school-operated programs)

Maximum class sizes: 20 or 22, depending on whether the program is operated by a school or a community organization

Number of students evaluated: 1,500 to 46,000 in the program; 400 to 44,000 in control groups. Some outcome variables were assessed for much larger numbers of students than were other variables.

Average cost per child per year: About $2,000 (2000-2001); this figure is about 50 percent more than in previous years because half-day programs now are being encouraged to move to full-day operation.

Furthest point of follow-up: Grade three

Benefits for program participants (compared with control groups):

- **Better overall readiness when children enter school**
- **Higher scores on achievement tests through grade three**
- **Less chance of students repeating a grade through grade three**

Characteristics of High-Quality Programs

Research on prekindergarten programs and on traditional child-care programs shows that program quality significantly affects children's readiness for school. Only high-quality programs improve school performance, and low-quality programs of either type actually may have negative effects, especially for at-risk children.

What are the essential characteristics of high-quality preschool programs? They fall into five basic program areas:

- **strong health and safety standards;**
- **low student-to-teacher ratios and small classes;**
- **qualified, well-compensated teachers;**
- **proven curricula and learning processes; and**
- **meaningful involvement by parents.**

Health and safety

◆ **High-quality preschool programs protect children's health and safety and ensure that their individual educational, social and physical needs are met.**

On one level, this is the most basic requirement that any parent would have for any setting in which children are in the care of others. State requirements for the operation of child-care programs generally are the most thorough and well-developed in the area of health and safety, and those standards usually apply to state prekindergarten programs. Almost all states require Head Start programs to be licensed and to meet state child-care standards.

However, programs that seek to improve at-risk children's readiness for school must go beyond ensuring a safe and healthy environment. Such children often come from families with limited economic resources and little access to health care. Making sure that children are not hungry — at least when they are attending the program — may be necessary to free them to focus their attention on learning. Programs also should be prepared to help families obtain essential health services for their children. A child with chronic earaches cannot give full attention to learning. A child who needs glasses will have trouble learning to read.

Student-to-teacher ratios and class sizes

- **High-quality preschool programs for 4-year-olds have no more than 10 children per teacher and no more than 20 children in a class. For younger children, student-to-teacher ratios should be lower and classes smaller.**

High-quality programs are built on low student-to-teacher ratios and small classes. In its 2000 report *Eager to Learn: Educating Our Preschoolers,* the National Research Council of the National Academy of Sciences concluded that "small classes and better ratios enable teachers to provide children with more individual attention and nurturing interactions." The same report also found that lower ratios and smaller classes "are associated with higher scores on global measures of quality and more extensive and complex language [skills]." The report did not specify optimum student-to-teacher ratios or class sizes for particular age groups. However, the detailed review of the research included in the report strongly suggested that a 10-to-1 ratio and a maximum of 20 students per class are the upper limits, even for children in early elementary school.

The required student-to-teacher ratios and maximum class sizes for all but one of the programs described in this report are equal to or better than the levels recommended by experts in early childhood education. (These recommendations are based partly on the experiences of early programs.) The one exception — the Texas Public School Prekindergarten program — allows student-to-teacher ratios substantially higher than the recommended 10-to-1, and some Texas programs have class sizes with more than the recommended maximum of 20 students. The potential negative effects of these weak standards appear to be offset somewhat by the Texas program's standards for teacher qualifications, which are substantially higher than those of six other programs (including three SREB states' programs) reviewed here.

Qualified, well-compensated teachers

- **High-quality preschool programs employ teachers who understand how children develop and learn and who can identify and respond to individual children's needs through varied learning activities. High-quality programs also pay their teachers enough to prevent high turnover rates for staff.**

If prekindergarten programs are to give children a better chance to succeed in school, most programs will need to raise their standards for teacher qualifications dramatically. The complex development of young children includes many "windows of opportunity" for developing skills that are critical to success in school and in life. Though all children go through the same developmental stages, the timetable varies considerably. The knowledge and understanding needed to support this process

effectively for many different children requires high-quality postsecondary education comparable to the formal training that teachers of elementary, middle and high school must receive.

The child development associate credential required by most programs is a significantly lower standard of quality than a bachelor's degree and state certification. At best, the CDA should be regarded as a positive — and perhaps necessary — first step toward state certification for all prekindergarten teachers.

The need to improve the pay for child-care and preschool teachers is inseparable from the need to increase teacher qualifications. Teaching jobs in child-care programs historically have been among the lowest-paying jobs, and teaching jobs in preschool programs also are at the low end of the scale. Low pay results in high turnover rates that disrupt teacher/child relationships when continuity is especially important to children's learning and development.

The relatively recent introduction of the CDA credential undoubtedly has resulted in modest improvements in the quality of many early-childhood programs. Salaries for teachers with CDAs have not increased sufficiently to produce marked reductions in turnover rates, however. In contrast, prekindergarten programs that require teachers to have state certification typically pay those teachers at levels comparable to those for public school teachers. Requiring only a CDA suggests a reluctance to face the unavoidable cost of doing prekindergarten right.

Appropriate curriculum models and learning processes

- **High-quality preschool programs use curriculum models and learning processes that create an engaging, responsive environment that helps each child learn and develop. They set curriculum goals across various disciplines, with an emphasis on language arts and mathematics. They also incorporate various teaching strategies that are most effective for each child's learning style and stage of development.**

A policymaker or other observer with limited background in child development and early childhood education can find it very difficult to tell a good pre-school classroom from a bad one. In both cases it may appear that children simply are playing. In a bad classroom, that actually may be all they are doing: simply playing, without direction from or engagement by teachers.

In a good classroom, on the other hand, what appears to be play will be anything but simple. A teacher who knows not only about children in general but also about the individual children in his or her classroom constantly will prompt children to ask questions and make choices. The teacher will provide hands-on

materials that are carefully chosen to raise each child's learning level and take advantage of the child's interests. The teacher also continuously will monitor and adjust what is being taught to allow for young children's limited attention spans. While the children think they simply are playing, the teacher will be well aware of how hard he or she is working.

Organizations such as the National Association for the Education of Young Children have developed extensive, research-based materials to help early childhood educators put these concepts into practice. There also are many curriculum models — including High/Scope, Montessori and Bank Street — that have proved effective. The key to success is not using any one "best" curriculum; rather, the key is adhering to the research-based standards that underlie all quality curricula.

Parent involvement

- **High-quality preschool programs value parents as their children's most important teachers and role models and find ways to help them do their jobs as well as possible.**

Parent involvement may be the most frequently mentioned and least practiced element of educational quality. In high-quality programs, parents are always welcome and have unrestricted access to any areas where their children are allowed. They are consulted regularly about decisions concerning their children's education. They participate in the classroom, and they are provided with strategies and materials that they can use at home to reinforce classroom experiences. Teachers never let children see or hear anything that might suggest that their parents are not held in the highest respect.

Not all parents will be mature enough or wise enough to take advantage of opportunities to get involved in their children's education, but most parents at least want to do what is best for their children. High-quality programs recognize and respect that desire; they seek to understand and respond to different parents' strengths and limitations to help them excel as their children's first teachers.

Quality counts

The benefits produced by the preschool programs discussed in this report can be attributed largely to the programs' generally high standards for quality. They share characteristics that are consistent with what is known about best practices in early childhood care and education. They provide children with the experiences that are most likely to prepare them for success in school. These programs not only produce evidence of the value of prekindergarten programs but also offer valuable lessons about how to design high-quality programs.

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